



ARTICLE RESEARCH

URL article: <http://jurnal.fkmumi.ac.id/index.php/woh/article/view/woh9209>**The Effect of Red Ginger Decoction And Honey On Blood Pressure Among The Elderly With Hypertension**^cJanno Sinaga¹, Henny Syapitri², Novita Aryani³, Yuyun Kristela Berutu⁴¹⁻⁴ Nursing Program, Faculty of Pharmacy & Health Sciences, Universitas Sari Mutiara Indonesia, IndonesiaEmail Corresponding Author^(c): Jannosinaga@sari-mutiara.ac.idJannosinaga@sari-mutiara.ac.id¹, hennysyapitri@sari-mutiara.ac.id², novitaaryani@sari-mutiara.ac.id³, yuyunkristela@sari-mutiara.ac.id⁴

ABSTRACT

Hypertension remains a major public health problem among older adults. In 2025, according to data from the WHO, 1.28 billion people aged 30–79 years will experience an increased risk of cardiovascular morbidity and mortality. Complementary herbal therapy has been increasingly used as a non-pharmacological approach to blood pressure control. To determine the effect of red ginger (*Zingiber officinale* var. *rubrum*) and honey decoction combination therapy on blood pressure reduction among elderly patients with hypertension at Tinada Primary Health Center. This study employed a quasi-experimental one-group pretest–posttest design. A total of 32 elderly individuals with hypertension grade 1–2 participated as the sample, selected using purposive sampling from 105 registered hypertensives. Respondents received 250 ml of red ginger decoction (100 g boiled in 500 ml water until 250 ml remained) mixed with 15 ml pure honey once daily for 7 consecutive days. Blood pressure was measured before and after intervention using a calibrated digital sphygmomanometer. Data were analyzed using a paired t-test with a significance level of $p < 0.05$. The mean systolic blood pressure decreased from 180.90 ± 12.51 mmHg to 160.10 ± 12.82 mmHg, while the mean diastolic pressure decreased from 94.50 ± 7.75 mmHg to 86.30 ± 5.56 mmHg. Statistical analysis showed a significant reduction in systolic and diastolic blood pressure ($p = 0.000$). The combination of red ginger decoction and honey is related to a decline in blood pressure among elderly hypertensive patients and may serve as a complementary therapy in hypertension management.

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INTRODUCTION

Hypertension is one of the most common degenerative diseases among adults. By 2025, more than 1.28 billion people aged 30–79 years will be diagnosed with hypertension, and it will become a major global public health problem (1). The risk of cardiovascular morbidity and mortality, such as stroke, coronary heart disease, heart failure, chronic renal disease, and early death, is greatly increased by persistently high blood pressure. The World Health Organization estimates that 1.13 billion individuals throughout the globe are dealing with hypertension, and by 2025, that figure is expected to reach 1.6 billion (2). More recent global guidelines from the International Society of Hypertension emphasize that uncontrolled hypertension continues to be the leading modifiable risk factor for cardiovascular disease, particularly in low- and middle-income countries (2).

In Indonesia, the prevalence of hypertension has increased substantially over the past decade. National health survey data show an increase from 25.8% in 2013 to 34.1% in 2018 (3). This burden is particularly pronounced in elderly and postmenopausal women due to hormonal changes, vascular stiffness, and endothelial dysfunction. Structural and functional changes in blood vessels, including decreased arterial elasticity and increased peripheral resistance, contribute to a progressive increase in systolic blood pressure². Similar trends have been observed globally, where vascular aging plays a central role in isolated systolic hypertension among the elderly (4).

The treatment of high blood pressure usually includes both pharmaceutical and non-pharmaceutical methods. Beta blockers and angiotensin-converting enzyme (ACE) inhibitors are two examples of antihypertensive drugs that effectively lower blood pressure; however, there is some evidence that their long-term usage is linked to side effects and decreased adherence (5). Medication fatigue and poor compliance are common challenges in community-based elderly populations. Therefore, complementary and alternative medicine (CAM) has gained increasing attention as an adjunctive strategy in hypertension management (6). A recent systematic review reported that a significant proportion of hypertensive patients worldwide utilize herbal or natural remedies to support blood pressure control (7).

Red ginger (*Zingiber officinale* var. *rubrum*) is a medicinal plant widely used in traditional medicine and has demonstrated potential antihypertensive properties (8). Its bioactive compounds, including gingerol, shogaol, flavonoids, and phenolic substances, exert vasodilatory, anti-inflammatory, and antioxidant effects that may improve endothelial function and reduce vascular resistance (9). In addition, honey contains polyphenols, flavonoids,

enzymes, and acetylcholine, which contribute to antioxidant activity and vascular protection (10). These mechanisms collectively support improved nitric oxide bioavailability and endothelial relaxation, which are essential for blood pressure regulation (11).

Although previous studies have demonstrated the individual benefits of ginger and honey in cardiovascular health, limited evidence exists regarding the combined effect of red ginger decoction and honey among elderly hypertensive patients in primary healthcare settings. Furthermore, few community-based quasi-experimental studies have examined the clinical magnitude of effect using standardized statistical measures such as effect size and confidence intervals (12).

Preliminary data from Tinada Public Health Center in Pakpak Bharat Regency indicated an increasing number of hypertension cases, accompanied by reported challenges in medication adherence and a strong preference for herbal remedies. However, evidence-based application of specific herbal combinations remains limited. Addressing this gap is essential for strengthening community nursing interventions and promoting safe complementary therapy integration (13).

Therefore, this study aimed to analyze the effect of a combination therapy of red ginger decoction and honey on blood pressure reduction among elderly patients with hypertension at Tinada Public Health Center. The findings are expected to contribute to evidence-based complementary nursing interventions in community hypertension management (14).

METHOD

Researchers in this research used a quasi-experimental design using a one-group pretest-posttest strategy to look at how a mixture of red ginger decoction and honey affected blood pressure in hypertensive older people. The study was conducted at Tinada Public Health Center, Pakpak Bharat Regency, Indonesia, in 2023. The study population consisted of 105 elderly individuals diagnosed with hypertension at the health center. The purposive sampling method was used to pick 32 individuals, taking into account predetermined inclusion and exclusion criteria. 1). age ≥ 60 years; 2). diagnosed with grade 1–2 hypertension; 3). able to communicate effectively, and; 4). willing to participate in the intervention. Exclusion criteria included elderly individuals with acute complications such as stroke, heart failure, or renal failure, as well as those currently consuming other herbal antihypertensive therapies. Sample size adequacy for paired comparison was considered sufficient to detect moderate-to-large effect sizes at $\alpha = 0.05$ with 80% statistical power. The intervention consisted of administering red ginger (*Zingiber officinale* var. *rubrum*) decoction combined with honey once daily for seven consecutive days.

Preparation protocol: 1). 100 grams of fresh red ginger were washed, crushed, and boiled in 500 mL of water; 2). The solution was simmered until the volume was reduced to 250 mL; 3). One tablespoon (± 15 mL) of pure honey was added before consumption; and 4). The mixture was consumed warm in the morning. Participants were instructed to maintain their usual antihypertensive medication regimen and dietary habits during the study period to minimize confounding variables. The patient's blood pressure was measured with a calibrated digital sphygmomanometer. The subjects were asked to sit down after a minimum of five minutes of rest and to place their arm at their chest level for the measurements. We measured the average value after taking two consecutive readings at 1- to 2-minute intervals. Blood pressure was assessed at baseline (pretest) and on the seventh day after completion of the intervention (posttest). The limitations of this study are the absence of a control group and a hypertension diet applied during the study.

The SPSS program was used for data analysis. We summarised the participant characteristics and blood pressure readings using descriptive statistics. The Shapiro-Wilk test was used to determine whether the data distribution was normal. Mean systolic and diastolic blood pressure before and after intervention were compared using a paired sample t-test, since the data were normally distributed ($p > 0.05$). Statistical significance was set at $p < 0.05$. This study received ethical approval from the Health Research Ethics Committee of Universitas Sari Mutiara Indonesia (No. 1917/F/KEP/USM/III/2023). All participants provided written informed consent prior to data collection. Confidentiality and anonymity were strictly maintained throughout the study.

RESULTS

A total of 32 elderly participants were included in this study. Table 1 presents the demographic characteristics of the respondents.

Table 1. Characteristics of Elderly Patients with Hypertension (n = 32)

Characteristics	n	%
Age (years):		
60–70	8	25.0
71–80	13	40.6
81–90	11	34.4
Sex:		
Male	18	56.3
Female	14	43.7

Most participants were aged 71–80 years (40.6%), and more than half were male (56.3%).

Table 2. Baseline Blood Pressure Before Intervention (n = 32)

Variable	Mean (mmHg)	SD
Systolic	180.90	12.51
Diastolic	94.50	7.75

The mean systolic blood pressure prior to intervention was 180.90 ± 12.51 mmHg, while the mean diastolic blood pressure was 94.50 ± 7.75 mmHg.

Table 3. Blood Pressure After Intervention (n = 32)

Variable	Mean (mmHg)	SD
Systolic	160.10	12.82
Diastolic	86.30	5.56

After seven days of intervention, the mean systolic blood pressure decreased to 160.10 ± 12.82 mmHg, and diastolic blood pressure decreased to 86.30 ± 5.56 mmHg.

Table 4. Paired t-Test Analysis of Blood Pressure Before and After Intervention (n = 32)

Variable	Mean Difference (mmHg)	SD	95% CI	t-value	p-value
Systolic	20.80	11.36	12.67–28.93	5.79	<0.001
Diastolic	8.20	5.94	3.95–12.45	4.37	<0.001

The means of diastolic blood pressure were 8.20 mmHg and systolic blood pressure were 20.80 mmHg (95% CI: 3.95-12.45; $p < 0.001$), according to the paired t-test analysis. The results show that the intervention resulted in a statistically significant drop in blood pressure.

DISCUSSION

This research found that hypertensive older adults whose blood pressure was reduced after seven days of taking a red ginger decoction with honey had a statistically significant effect. The mean decrease of 20.80 mmHg in systolic blood pressure and 8.20 mmHg in diastolic blood pressure indicates a clinically meaningful improvement in cardiovascular parameters.

Regarding respondent characteristics, most participants were aged 71–80 years (40.6%). This finding reflects the increasing prevalence of hypertension in older adults, which is strongly associated with vascular aging. Structural changes in arterial walls, including collagen deposition and reduced elastin, contribute to arterial stiffness and isolated systolic hypertension in elderly populations (15). The predominance of male participants (56.3%) is consistent with epidemiological data showing higher hypertension prevalence among older men compared to women in certain populations (16).

The baseline systolic mean of 180.90 mmHg indicates that many participants were classified within stage 2 hypertension. The risk of cardiovascular problems, such as stroke, myocardial infarction, and heart failure, is greatly increased at such high levels. Effective blood pressure management measures

are urgently needed since, as Carey and Whelton, point out, the risk of cardiovascular disease increases proportionally for every 10 mmHg increase in systolic blood pressure (17).

Following the intervention, systolic blood pressure decreased to 160.10 mmHg and diastolic pressure to 86.30 mmHg. Although some participants remained hypertensive, the magnitude of reduction is clinically relevant. Evidence suggests that even modest reductions (5–10 mmHg) in systolic blood pressure can reduce stroke risk by approximately 30%¹. Therefore, the 20.80 mmHg reduction observed in this study may substantially lower long-term cardiovascular morbidity if sustained.

The paired t-test results confirmed statistical significance ($p < 0.001$) for both systolic and diastolic changes, with confidence intervals not crossing zero. This indicates a consistent effect of the intervention across participants. The relatively narrow confidence intervals suggest stability in treatment response despite individual variability.

Red ginger's (*Zingiber officinale* var. *rubrum*) antihypertensive action is mainly associated with its bioactive components, including gingerol and shogaol. These chemicals relax blood vessel constriction by decreasing oxidative stress in vascular endothelial cells and increasing nitric oxide production⁵. Reduced blood pressure is the result of improved endothelial function, which reduces peripheral vascular resistance (15).

Additionally, ginger has demonstrated inhibitory effects on angiotensin-converting enzyme (ACE), which plays a central role in blood pressure regulation through the renin–angiotensin–aldosterone system. By modulating this pathway, ginger may mimic the mechanism of pharmacological ACE inhibitors, albeit through natural phytochemical actions (18).

Honey has anti-inflammatory and antioxidant properties, making it a useful supplementary agent. Evidence suggests that honey's high polyphenol and flavonoid content may enhance endothelial function while decreasing oxidative stress indicators (19). Oxidative stress is a key contributor to hypertension progression, particularly in aging individuals. Therefore, honey may enhance vascular protection and amplify the antihypertensive effect of ginger (20).

The synergistic interaction between red ginger and honey likely explains the substantial blood pressure reduction observed. While ginger directly induces vasodilation and modulates ACE activity, honey supports endothelial integrity and reduces oxidative damage. Such complementary mechanisms may produce additive or even synergistic cardiovascular benefits (21).

These findings align with broader evidence supporting complementary and alternative medicine (CAM) in hypertension management, concluded that herbal therapies can serve as effective adjuncts to conventional antihypertensive treatment (22). However, most prior studies investigated single-herb interventions, making the present combination approach a valuable contribution to current literature .

From a nursing perspective, integrating evidence-based complementary therapies into primary healthcare settings may enhance holistic care delivery (23). Elderly patients often experience polypharmacy and medication fatigue, leading to poor adherence. Introducing safe, culturally accepted

herbal therapies may improve patient engagement, satisfaction, and adherence to overall hypertension management strategies (24).

Nevertheless, several limitations must be considered. The one-group pretest–posttest design lacks a control group, limiting causal inference. Regression to the mean or external influences cannot be entirely excluded. Furthermore, dietary intake, physical activity, and medication adherence were not objectively monitored, short treatment which may have influenced outcomes (25).

Future research should employ randomized controlled trials with larger sample sizes and extended follow-up periods to confirm efficacy and assess long-term safety. Additionally, biochemical markers of oxidative stress and endothelial function could be measured to clarify underlying mechanisms (26).

CONCLUSIONS AND RECOMMENDATIONS

This research found that after seven days of intervention, systolic and diastolic blood pressure among elderly individuals with hypertension were considerably lowered when they were given a decoction of red ginger (*Zingiber officinale* var. *rubrum*) mixed with honey. The mean reduction of 20.80 mmHg in systolic blood pressure and 8.20 mmHg in diastolic blood pressure indicates not only statistical significance but also meaningful clinical relevance in cardiovascular risk reduction. The findings suggest that red ginger and honey may serve as a promising complementary therapy in community-based hypertension management, particularly among elderly populations. The synergistic effects of vasodilation, antioxidant activity, and anti-inflammatory properties likely contribute to improved vascular function and reduced peripheral resistance.

Although the results are encouraging, further randomized controlled trials with larger sample sizes and longer follow-up periods are necessary to confirm efficacy, evaluate long-term safety, and determine optimal dosage. Integrating evidence-based complementary therapy into primary healthcare nursing practice may enhance holistic and patient-centered approaches to hypertension management.

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